Download for Free: Robert F. Kennedy's New Book — 'A Letter to Liberals'

05/09/23 • BIG FOOD › VIEWS

# How Junk Food Rewires Your Brain

*Researchers found participants who ate high-fat, high-sugar snacks experienced changes in neural encoded responses so they no longer preferred low-fat, low-sugar snacks and they subconsciously preferred a lot of fat and sugar.*

**By Dr. Joseph Mercola**

3

***Miss a day, miss a lot.*** *Subscribe to The Defender's Top News of the Day.* ***It's free.***

**Story at a glance:**

- If you're like most people, you are consuming an unhealthy amount of sugar on a regular basis hidden in processed food, added by the teaspoon to coffee and tea, or used to sweeten candy, cakes and beverages.
- Researchers found participants who ate high-fat, high-sugar snacks experienced changes in neural encoded responses so they no longer preferred low-fat, low-sugar snacks and they subconsciously preferred a lot of fat and sugar.
- Data show bingeing on sugar for just six weeks can slow brain function, memory and learning. One study showed sugar affected the reward system in a "manner similar to that of drugs of abuse."
- Eating junk food for one week can impair your appetite control; data also show the more sugar you eat, the lower your nutrient intake.
- Eliminating sugar is a quick and clear route to better health. Metabolic flexibility is a key to better health; it is also important to avoid industrial vegetable oils or seed oils, margarine, shortening and any fake butter and spreads. Instead, choose from a list of healthy fat foods that include olives, avocados and coconut oil.

Donate Now

You make the difference.

GUIDESTAR PLATINUM SEAL OF TRANSPARENCY 2020

Latest News

'Absolutely Reckless': NIH Allows EcoHealth Alliance to Resume Coronavirus Research

'Just Like Regular Pork': FDA Grants 'Investigational' Approval for Pork Products Made From Gene-Edited Pigs

More Pesticides on Kids' Food? EPA Wants to Greenlight Chemical Linked to Reproduction, Developmental Issues

MORE NEWS

Latest Views

Chemical in Popular Bug Spray Brands May Cause Neurodevelopmental Damage

Top 20 'Nonprofit' Hospitals Pocketed $23 Billion in Taxpayer-Funded COVID Aid

Can We Reboot the Environmental Movement — So It Protects Freedom, Too?

MORE VIEWS

If you're like most people, you're consuming an unhealthy amount of sugar on a regular basis. Even if you don't consistently eat junk food, candy or sweetened beverages, most processed foods contain an excessive amount of added sugar.

The BBC documentary "The Truth About Sugar," revealed one serving of Pad Thai noodles has nearly 9.5 teaspoons of sugar; a package of sweet and sour chicken with rice has 12.5 teaspoons; and a serving of dry bran flakes, a breakfast that many think is a healthier choice, has 3 teaspoons.

It is crucial to understand that it's not just cakes, candies, cookies and sweets that get people into trouble with sugar.

Unfortunately, even many baby foods and formulas contain a shocking amount of sugar that can set your child along a lifelong path of sugar addiction and health problems.

One 2020 study examined samples of infant formula available in 11 countries and found most were higher in carbohydrates, sugar and lactose than breast milk and many contain more sugar than a glass of soda.

In an article in The Conversation, one of the researchers wrote:

> "Some formula milks have double the sugar per serving than a glass of soda. But perhaps more shocking is the fact that there are so few regulations in place to control sugar content and to make sure consumers are well informed."

As you consider the data from studies in the past decade, it's easy to understand why child health advocates are strong promoters of breastfeeding and are fighting to provide healthier infant nutritional alternatives to mothers who do not breastfeed.

**High-fat, high-sugar junk food changes your brain**

The featured study published in Cell Metabolism was performed by researchers at the Max Planck Institute for Metabolism Research in Cologne, Germany, in collaboration with a team of scientists from Yale University.

The researchers sought to understand the underlying mechanism between eating foods high in fat and sugar and the associated risk of obesity and altered brain dopamine function.

The researchers questioned whether the brain alterations were preexisting, and thus increased a person's susceptibility to weight gain because they were more apt to eat foods that were high in fat and sugar, or if the brain changes were directly attributable to exposure to diets that were rich in fat and sugar.

The researchers used a randomized, controlled study and engaged 57 normal-weight individuals for a period of eight weeks during which one group was exposed daily to a high-fat, high-sugar snack and the other to a low-fat, low-sugar snack in addition to their usual diet.

At the conclusion of the study, the data showed those who consumed a high-fat, high-sugar snack had a lower preference for low-fat foods, had an increased brain response and had "associative learning independent of food cues or reward."

The researchers measured associative learning using imaging in combination with auditory cues and visual outcomes.

They discovered those who ate a high-fat, high-sugar snack had neural encoding responses that were more enhanced than those eating a low-fat, low-sugar snack. Notably, the differences were not related to the individual's age, sex, insulin resistance, or fat mass.

The intervention occurred over eight weeks and the researchers noted that the participants in both groups had no change in body weight or metabolic health. Marc Tittgemeyer from Max Planck Institute led the study.


Get FREE News & Updates!

First Name..

Last Name..

Email..

SIGN UP

Get Text Alerts

Sign up for breaking news from The Defender.

Currently only eligible for numbers in the U.S. and Canada.

1234567890

Phone

REQUIRED. Phone number must be in a standard 10-digit format: 1234567890 or 123-456-7890

CONTINUE

He commented on the results in a press release, saying:

> "Our measurements of brain activity showed that the brain rewires itself through the consumption of chips and co. It subconsciously learns to prefer rewarding food. Through these changes in the brain, we will unconsciously always prefer foods that contain a lot of fat and sugar.
>
> "New connections are made in the brain, and they don't dissolve so quickly. After all, the whole point of learning is that once you learn something, you don't forget it so quickly."

**This is your brain on sugar**

According to a press release from UCLA Health, bingeing on sweets and sweetened beverages for as little as 6 weeks can make you "stupid."

The study showed how eating a diet high in fructose could slow brain function, memory and learning.

"Our findings illustrate that what you eat affects how you think," said Fernando Gomez-Pinilla, a professor of neurosurgery at the David Geffen School of Medicine at UCLA. "Eating a high-fructose diet over the long term alters your brain's ability to learn and remember information."

In this study, the researchers found that a diet deficient in omega-3 fatty acids exacerbated the damage and increased the vulnerability to metabolic dysfunction and impaired cognitive function.

Amy Reichelt, neuroscientist, researcher and consultant explains what happens in the brain:

> "When we eat sweet foods the brain's reward system — called the mesolimbic dopamine system — gets activated. Dopamine is a brain chemical released by neurons and can signal that an event was positive. When the reward system fires, it reinforces behaviors — making it more likely for us to carry out these actions again.
>
> "Dopamine 'hits' from eating sugar promote rapid learning to preferentially find more of these foods.
>
> "Our environment today is abundant with sweet, energy-rich foods. We no longer have to forage for these special sugary foods — they are available everywhere. Unfortunately, our brain is still functionally very similar to our ancestors, and it really likes sugar."

A 2019 study published in Scientific Reports found that sugar affected the brain's reward system in mini-pigs in a "manner similar to that of drugs of abuse."

The paper's senior writer spoke to a reporter from Inverse, saying:

> "Sugar alters brain circuitry in ways that are similar to, for example, cocaine, which is well known to alter the dopamine and opioid systems in the brain."

Using PET imaging after the mini-pigs were exposed to sucrose water for one hour a day for 12 days, the researchers wrote:

> "Excessive sucrose consumption elicits addiction-like craving that may underpin the obesity epidemic. Opioids and dopamine mediate the rewarding effects of drugs of abuse, and of natural rewards from stimuli such as palatable food."

The imaging demonstrated that consumption of sugar triggered a release of natural opioids and dopamine, thus lowering the availability of those receptors.

This type of pig was chosen as they have well-defined subcortical and prefrontal cortical regions that offered a "more direct translation to human brain function."

Reduced receptor availability is a sign of overstimulation and results in down-regulation of the receptors to protect your brain from damage. The drawback of this mechanism is that you now require a higher dose to get the same pleasure response. This is a key mechanism to addiction.

**Junk food interferes with appetite control and nutrition**

Even a single week of binge eating fast food can impair your appetite control. In one Australian study, researchers found that volunteers were more likely to want more junk food even after they had just eaten.

The same volunteers scored lower on memory tests, which confirmed past data that showed a Western-style diet impairs memory and learning.

A 2020 Swedish study demonstrated that the more added sugar you eat, the lower your micronutrient intake.

For example, eating a fast-food hamburger, fries and a soda may be close to an entire day's worth of required calories, but without the necessary vitamins and minerals, micronutrients and live enzymes that your body requires to function and thrive.

The data were taken from samples of two populations. The researchers observed an inverse relationship between added sugar and all micronutrients in both groups.

The relationship was linear, which led the researchers to conclude that a higher intake of added sugar increased the risk that micronutrient intake would be compromised.

While there is evidence to suggest that sugar is a highly addictive substance, there is also some data to suggest that bingeing on high-fat, high-sugar foods may not cause an opiate-like response that is more commonly seen when bingeing on sugar alone.

This suggests that the presence of fat could ameliorate some of the addictive effects, similar to the study demonstrating a deficiency in omega-3 fats increased the risk of metabolic dysfunction.

Ultra-processed junk food is high in trans-fat and linoleic acid, which should not be confused with healthy saturated fat found in pasture-raised, organic meat and dairy.

Additionally, pasteurized, organic whole meat should never be confused with ultra-processed fake meat, which can include fake blood processed from yeast genetically engineered to mimic the taste and texture of real beef.

While the food industry uses strategies to position fake meat as a healthy alternative to natural meat, genetically engineered and pesticide-laden ingredients do not hold the same nutritive value.

A second fake meat option is lab-cultivated meat.

One company received the U.S. Food and Drug Administration's nod of approval in March to sell its product in the U.S.

GOOD Meat, the company that grows chicken and other animal cells in the lab, must now get a grant of inspection from the U.S. Department of Agriculture to begin production in California.

The Good Food Institute, a think tank that focuses on meat alternatives, calls this a "food system transformation in action."

In other words, the food industry is transforming your food system from natural, whole foods to ultra-processed or lab-cultivated alternatives, for which there is no long-term safety data in human health.

**Eliminating sugar is a quick and clear route to better health**

Excessive amounts of sugar also trigger other brain changes, including impairing spatial memory and inhibiting neurogenesis in the hippocampus, the area of the brain that's involved in learning and memory processes.

An animal study also showed a high-sugar diet alters inhibitory neurons in the prefrontal cortex, where decision-making and impulse control are centered.

In addition to impairing impulse control and the inability to delay gratification, which may contribute further to addiction, this brain alteration also increases the risk of mental health problems in children and adolescents.

A high-sugar diet also takes a toll on your physical health by contributing to unwanted pounds, and the pace could be remarkably rapid.

As noted in the BBC program "The Truth About Sugar," drinking three cups of tea or coffee each day with 2 teaspoons of sugar can result in a 4.5-kilogram (9.9 pounds) weight gain in one year, provided you don't increase your physical activity to burn off the extra calories.

Please note that even with added exercise to offset the added calories there is an increased inflammatory response from the added sugar.

Research shows that reducing added sugar from an average of 27% of daily calories to 10% can improve biomarkers associated with health in as little as 10 days, even when the overall calorie count and percentage of carbohydrates remain the same. While this sounds simple, simple is not the same as easy.

Reducing or eliminating added sugar is a quick and clear route, but initially, it can be challenging and maybe tricky if your diet consists primarily of processed foods.

According to SugarScience.org, added sugar hides in 74% of processed foods under different names. Please see SugarScience.org's "Hidden in Plain Sight" webpage for the full list of 61 different names, you may find for sugar on food labels.

When you're trying to avoid sugar, you need to avoid all of these, as they have similar effects. Pay close attention to processed fructose, such as high fructose corn syrup, as it tends to have the most adverse health effects and is a primary driver of obesity and diabetes.

You are likely to find that after not eating junk food for several weeks or months, the products don't hold the same appeal and are not as "tasty."

**Metabolic flexibility is a necessary part of the plan**

If you suspect that you are addicted to sugar or junk food, my recommendation is to clean up your diet. In my experience, the key is eating foods high enough in healthy fat and low in refined carbohydrates.

Processed foods should be assiduously avoided as most are loaded with sugar and dangerous levels of linoleic acid, which increases metabolic oxidative stress.

Real food is the key no matter what your ratios of fat, carbs and protein are. Another key is to select the right fat.

As much as possible you should avoid industrial vegetable oils or seed oils, margarine, shortening and any fake butter and spreads.

Consider this list of healthy fats, which help you feel full longer:

- Olives
- Olive oil (look for third-party certification, as 80% of olive oils are adulterated with vegetable oils)
- Marine-based omega-3 fat from fatty fish low in mercury like wild-caught Alaskan salmon, sardines, anchovies and/or krill oil
- Butter made from raw, grass-fed, organic milk
- Raw nuts such as macadamia and pecans
- Seeds like black sesame, cumin, pumpkin, flax, chia and hemp seeds
- Avocados

- Grass-fed meats
- MCT oil
- Ghee (clarified butter); lard and tallow (excellent for cooking)
- Raw cacao butter
- Organic, pastured eggs
- Tallow
- Lard
- Coconut oil (excellent for cooking as it can withstand higher temperatures without oxidizing)

*Originally published by Mercola.*

*The views and opinions expressed in this article are those of the authors and do not necessarily reflect the views of Children's Health Defense.*


## Subscribe to The Defender – It's Free!

First Name.. Last Name.. Email.. SIGN UP


SUGGEST A CORRECTION

**Dr. Joseph Mercola**

Dr. Joseph Mercola is the founder of Mercola.com.



**Sign up for free news and updates from Children's Health Defense. CHD focuses on legal strategies to defend the health of our children and obtain justice for those injured. We can't do it without your support**

Republishing Guidelines

**Children's Health Defense Comment Policy**

We welcome relevant and respectful comments. Off-topic comments may be removed.

Please read our Comment Policy before commenting.

Got it

**3 Comments** Login

Join the discussion…

LOG IN WITH OR SIGN UP WITH DISQUS

Name

Share Best Newest Oldest

**BChristine**

2 days ago edited

You really ***'are what you eat';*** despite some controversy on that statement. Think of the chemicals and additives in junk food and what they do to your body. Your natural body cannot tolerate the unnatural without negative side effects.

As far as rewiring the brain: I believe it ... It seems we are dealing with a dumbed-down society. I am nearing 65, and constantly amazed at how dumb and ignorant people can be (sorry to say); especially younger people (say under 50). I have believed for years "it's the food". Although there are certainly other factors involved, I think food and nutrition (or lack of) is the #1 culprit.

4 0 Reply • Share ›

**Sieglinde Koenigseder**

2 days ago

also beware of GMO food, toxic to humans and animals - Bill Gates major investor in GMO foods, fake lab meat, he also buys up productive farm land to stop small scale organic farming! Major investor in Bayer and Monsanto -manufacturers of poisons and toxic glyphocide

2 0 Reply • Share ›

**Maximilian Pucher**

a day ago edited

The abstract is misleading as it points to fat generally being a problem. It is only processed unsaturated fats and clearly sugar in all its forms, or a combination of both as in junk food that destroys the metabolic health. So it would be important to focus on sugar and not on 'fat and sugar'. Saturated fats are as such not detrimental to your health as long as the calories are taken into account.

1 0 Reply • Share ›


Children's Health Defense®

**Children's Health Defense®** is a 501(c)(3) non-profit organization. Our mission is to end childhood health epidemics by working aggressively to eliminate harmful exposures, hold those responsible accountable and establish safeguards to prevent future harm. We fight corruption, mass surveillance and censorship that put profits before people as well as advocate for worldwide rights to health freedom and bodily autonomy.

EN

SUBSCRIBE - IT'S FREE! BECOME A MEMBER MEMBER LOGIN

**Donations are tax deductible to the full extent of the law. EIN #26-0388604**

Children's Health Defense • Legal Disclaimer • Terms of Use • Privacy Policy • Donate • Work for CHD • Whistleblowers Welcome • Contact • Social • Sitemap

© 2016 - 2023 Children's Health Defense® • All Rights Reserved